
REMARKS

This communication is a full and timely response to the non-final Office Action dated May 24, 2004. By this communication, claims 22 and 24 have been canceled without prejudice or disclaimer of the underlying subject matter. Claim 25 has been added. Support for claim 25 can be found variously throughout the specification and claims, for example, in original claim 21 and at page 6, lines 8-17 and page 13, lines 14-20 of the specification. Further claims 26, 27, 29, and 30 have been added. Support for claims 26, 27, 30, and 31 can be found variously throughout the specification and claims, for example, in original claims 22 and 24, respectively. Still further claim 28 has been added. Support for claim 25 can be found variously throughout the specification and claims, for example, in original claim 21 and page 13, lines 14-20 of the specification. No new matter has been added. Claims 21 and 25-27 are pending where claims 21 and 25 are independent.

Rejections Under 35 U.S.C. §102

Claims 21 and 24 were rejected under 35 U.S.C. §102(e) as anticipated by *Kadomara et al.*, U.S. Patent No. 6,391,437. Applicant respectfully traverses this rejection.

As noted above, claims 21 and 24 were canceled therefore the rejection of claims 21 and 24 under §102(e) is moot and should be withdrawn.

Further, Applicant notes that *Kadomara* is not prior art. The instant application is a divisional of U.S. Patent Application 09/186,226 (now U.S. Patent No. 6,668,905) having a filing date of November 6, 1998 and a foreign priority date of November 6, 1997. In contrast, *Kadomara* has a filing date of January 29, 1998, which is after November 6, 1997. As indicated in the Office Action Summary certified copies of the priority documents were filed in connection with the '226 parent application. Further, Applicants have enclosed a certified translation of the priority document with this communication.

Rejections Under 35 U.S.C. §103

Claim 22 was rejected under 35 U.S.C. §103(a) as unpatentable over *Kadomara*. As noted above, claim 22 was canceled, thus, the rejection the claim 22 under §103 is moot and should be withdrawn.

Claims 21, 22, and 24 were rejected under 35 U.S.C. §103(a) as unpatentable over *White et al.*, U.S. Patent No. 5,395,701 in view of *Jackson et al.*, U.S. Patent No. 5,418,015. As noted above, claims 21, 22, and 24 have been canceled, thus, the rejection of these claims under §103 is moot and should be withdrawn.

Newly Added Claims

Claim 25 recites an aluminum nitride/aluminum base composite material, which comprises (a) a base material obtained by preparing a preform having pores, obtained by sintering aluminum nitride powder, enclosing the preform in a container provided in a molten metal pressure apparatus, pouring a molten aluminum base material into the container, and, applying pressure to the molten aluminum base material in the container to fill the aluminum base material in the pores of the perform; (b) a covering layer consisting of a ceramic material and covering a surface of the base material; and (c) an intermediate underlayer, disposed between said base material and said covering layer, said intermediate layer comprising nickel containing approximately 5% weight aluminum, wherein said base material and said covering layer satisfy the relation of $(\alpha_1 - 4) \leq \alpha_2 \leq (\alpha_1 + 4)$, and wherein α_1 is the linear expansion coefficient of said base material and α_2 is the linear expansion coefficient of said covering layer.

White nor *Jackson* either alone or in combination disclose, teach, or suggest at least said base material and said covering layer satisfy the relation of $(\alpha_1 - 4) \leq \alpha_2 \leq (\alpha_1 + 4)$, and wherein α_1 is the linear expansion coefficient of said base material and α_2 is the linear expansion coefficient of said covering layer.

White discloses a process for forming an aluminum matrix composite. In this process, an aluminum-magnesium alloy in the molten state is contacted with or delivered to a surface or a permeable mass of ceramic material. The molten aluminum alloy then spontaneously and progressively infiltrates the permeable ceramic mass to form a metal matrix composite. See col. 5, lines 51-63. The method disclosed in *White* does not use pressure to force the molten metal into a mass of ceramic material, and allows for the production of substantially uniform aluminum alloy matrix composites having a high volume fraction of ceramic material and low porosity. See col. 8, line 64 to col. 9, line 1. Therefore, *White* cannot disclose, teach, or suggest the base material as recite in claim 25 because *White* teaches away from applying pressure to the molten aluminum base material in the container.

The Office Action acknowledges that *White* fails to disclose, teach, or suggest the use of an underlayer, and relies on *Jackson* to remedy this deficiency. In addition, Applicant notes that *White* fails to disclose, teach, or suggest that the base material and covering layer satisfy a relationship.

Jackson discloses a process for forming a refractory oxide coating, where zircon is mixed with an oxide, and further mixed with zirconia. This mixture is then stabilized with a stabilizing oxide to form a coating that is resistant to thermal shock, wear, and the pick-up of iron or iron oxides from steel sheets. See col. 3, lines 44-52. *Jackson* further discloses that the coating is applied to a substrate. An undercoat compatible with the substrate may also be applied between the substrate and the coating, where the undercoat is a metallic or ceramic alloy. See col. 5, lines 49-62. *Jackson*, however, fails to disclose, teach, or suggest that the base material and covering layer satisfy a relationship as recited in the claim.

In sum, *White* and *Jackson* either singly or combined fail to disclose, teach, or suggest at least said base material and said covering layer satisfy the relation of $(\alpha_1 - 4) \leq \alpha_2 \leq (\alpha_1 + 4)$, and wherein α_1 is the linear expansion coefficient of said base material and α_2 is the linear expansion coefficient of said covering layer, as recited in claim 25. In addition, *White* teaches away from forming a base layer as recited in the claim 25. Therefore, the combination of *White* and *Jackson* does not disclose, teach, or suggest every element recited in claim 25, and thus cannot achieve the claimed results.

To establish *prima facie* obviousness of a claimed invention, all of the claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Moreover, obviousness "cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination." ACS Hosp. Sys. V. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). Accordingly, Applicant respectfully requests that claim 25 be allowed.

Claims 26 and 27 depend from claim 25. By virtue of this dependency, Applicant submits that claims 26 and 27 are allowable for at least the same reasons given above with respect to claim 25. In addition, Applicant submits that claims 26 and 27 are further distinguished over *White* and *Jackson* by the additional elements recited therein, and particularly with respect to each claimed combination. Applicant respectfully requests, therefore, these claims be allowed.

Claim 28 recites an aluminum nitride/aluminum base composite material, which comprises (a) a base material obtained by preparing a preform having pores, obtained by sintering aluminum nitride powder, enclosing the preform in a container provided in a molten metal pressure apparatus, pouring a molten aluminum base material into the container, and, applying pressure to the molten aluminum base material in the container to fill the aluminum base material in the pores of the perform; (b) a covering layer consisting of a ceramic material and covering a surface of the base material; and (c) an intermediate underlayer, disposed between said base material and said covering layer, said intermediate layer comprising nickel containing approximately 5% weight aluminum.

The combination of *White* and *Jackson* fails to disclose, teach, or suggest every element recited in claim 28. In particular, *White* teaches away from forming a base layer as recited in the claim 25. The method disclosed in *White* does not use pressure to force the molten metal into a mass of ceramic material, and allows for the production of substantially uniform aluminum alloy matrix composites having a high volume fraction of ceramic material and low porosity. *See* col. 8, line 64 to col. 9, line 1. Therefore, the combination of *White* and *Jackson* does not disclose, teach, or suggest every element recited in claim 28, and thus cannot achieve the claimed results.

To establish *prima facie* obviousness of a claimed invention, all of the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Moreover, obviousness “cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination.” *ACS Hosp. Sys. V. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). Accordingly, Applicant respectfully requests that claim 28 be allowed.

Claims 29 and 30 depend from claim 28. By virtue of this dependency, Applicant submits that claims 29 and 30 are allowable for at least the same reasons given above with respect to claim 28. In addition, Applicant submits that claims 29 and 30 are further distinguished over *White* and *Jackson* by the additional elements recited therein, and particularly with respect to each claimed combination. Applicant respectfully requests, therefore, these claims be allowed.

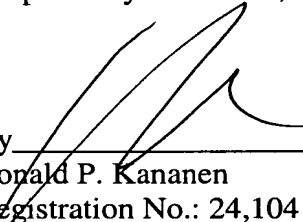
Conclusion

Based on at least the foregoing amendments and remarks, Applicants submit that claims 25-30 are allowable, and this application is in condition for allowance. Accordingly, Applicants request favorable reexamination and reconsideration of the application. In the event the Examiner has any comments or suggestions for placing the application in even better form, Applicants request that the Examiner contact the undersigned attorney at the number listed below.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 18-0013, under Order No. SON-1426/DIV from which the undersigned is authorized to draw.

Dated: July 7, 2004

Respectfully submitted,


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Enclosure(s): Certified Copy of English language translation of Priority Document

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